

Laparoscopic Treatment of Ovarian Vein Syndrome

Matthew T. Gettman, MD, Yair Lotan, MD, Jeffrey Cadeddu, MD

ABSTRACT

Background: Ovarian vein syndrome is a rare cause of ureteral obstruction. In this report, we describe an unusual presentation of the syndrome successfully treated with laparoscopic techniques.

Methods: The patient presented with a 12-month history of right flank pain and a right abdominal mass. The preoperative evaluation revealed renal malrotation, hydronephrosis, decreased renal function, and presumed ureteropelvic junction obstruction.

Results: By using a transperitoneal laparoscopic approach, an enlarged ovarian vein was identified as the cause of the ureteral obstruction. The ovarian vein was divided with a laparoscopic stapler. The patient's postoperative course was unremarkable, and she was discharged from the hospital on the second postoperative day. At 3-months follow-up, the patient was completely asymptomatic without evidence of obstruction.

Discussion: Ovarian vein syndrome remains a rare diagnosis of exclusion. A careful preoperative evaluation is required to exclude other causes of ureteral obstruction. By using a laparoscopic approach, the ureter and obstructing vessel were readily identified to effectively treat the patient. With the minimally invasive approach, postoperative recovery and patient quality of life were improved.

Key Words: Laparoscopy, Ureteral obstruction, Ovarian vein syndrome.

INTRODUCTION

Ovarian vein syndrome (OVS) is an uncommon but recognized cause of ureteral obstruction and flank pain. Most cases are related to changes of pregnancy, but the syndrome can also present in a chronic form following pregnancy. Typically, OVS occurs in thin females with a right-sided predilection.¹⁻⁸ This case highlights a unique presentation, the preoperative evaluation, and laparoscopic management of ovarian vein syndrome.

CASE REPORT

A 43-year-old female presented with a 12-month history of right flank pain and a palpable right abdominal mass. In addition, she previously had a benign cyst surgically removed from her right ovary. Her obstetric and gynecologic history was otherwise unremarkable. She denied having a history of gross hematuria, stones, or urinary tract infection. On examination, the patient was very thin and had a palpably visible mass in the right mid-abdomen that was mildly tender to palpation. A urine analysis was normal and serum creatinine was 0.8 mg/dL. An intravenous urogram revealed excretion of contrast bilaterally. The right kidney was hydronephrotic and malrotated. Contrast was not visualized distal to the ureteropelvic junction (**Figure 1**). A diuretic renal scan revealed a severe obstruction of the right kidney ($T_{1/2}$ = 84 minutes) and a differential function of 26%. A right retrograde pyelogram revealed dilation and tortuosity of the very proximal ureter consistent with a presumed ureteropelvic junction (UPJ) obstruction.

The working diagnosis was ureteropelvic junction obstruction; and given the decreased differential function of the right kidney, presence of renal malrotation, and findings demonstrated on the retrograde pyelogram, the patient was offered laparoscopic treatment rather than endopyelotomy.

In preparation for the laparoscopic procedure, a right ureteral stent was placed. The patient was positioned in a modified flank position for transperitoneal laparoscopy. Trocars were placed at the umbilicus (12 mm), 5.0 cm above and medial to the iliac crest (5 mm), and mid-way between the umbilicus and xiphoid process (12

The Department of Urology, University of Texas Southwestern Medical Center at Dallas, Dallas, Texas, USA (all authors).

Address reprint requests to: Jeffrey A. Cadeddu, MD, Department of Urology, The University of Texas Southwestern Medical Center, 5323 Harry Hines Blvd, Dallas, Texas 75390-9110, USA. Telephone: 214 648 2888, Fax: 214 648 8786, E-mail: jeffrey.cadeddu@UTSouthwestern.edu

© 2003 by JSLS, *Journal of the Society of Laparoendoscopic Surgeons*. Published by the Society of Laparoendoscopic Surgeons, Inc.

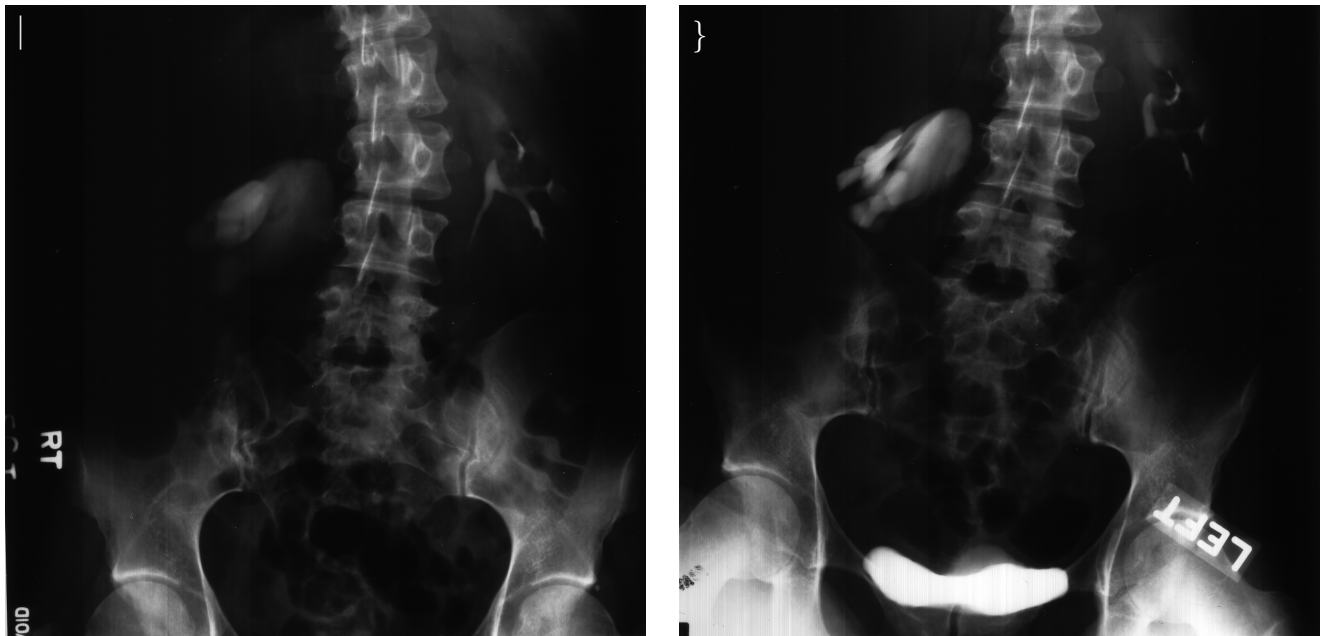


Figure 1. Intravenous urogram completed before (A) and after (B) laparoscopic division of the ovarian vein. Postoperatively, hydronephrosis has significantly improved and obstruction has resolved.

mm). The colon was reflected medially, and dissection of the right ureter and ureteropelvic junction was completed. An enlarged right ovarian vein, approximately 2.0 cm in diameter, was identified externally compressing the anterolateral aspect of the ureter near the ureteropelvic junction (**Figure 2**). No additional crossing vessels were identified. The ovarian vein was carefully dissected from the ureter and divided with a vascular stapler (**Figure 2**). The renal malrotation was not contributing to the obstruction; therefore, nephropexy was not performed. Thereafter, the UPJ appeared free of intrinsic obstruction (**Figure 2**). The postoperative recovery was unremarkable and the patient was discharged on the second postoperative day. The urinary stent was removed 3 weeks after surgery. At 3-months follow-up, the patient was completely pain free, and an intravenous pyelogram revealed significantly decreased hydronephrosis and no evidence of UPJ obstruction (**Figure 1**).

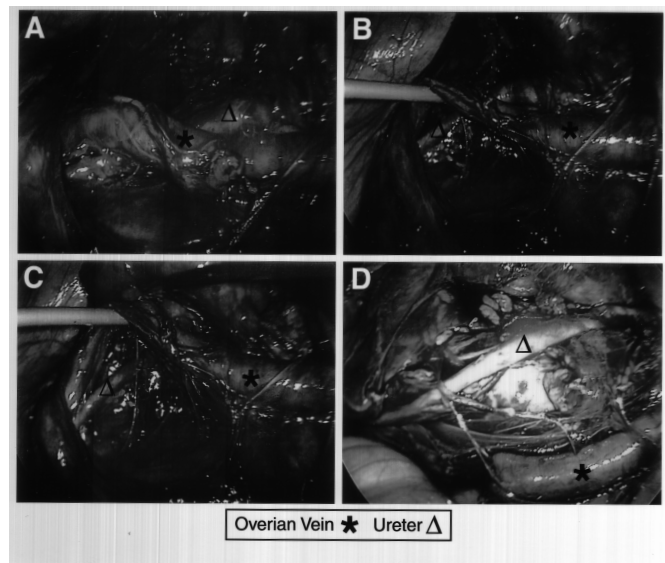


Figure 2. Intraoperative appearance of the ureteropelvic junction and ovarian vein before (A), during dissection (B,C), and after (D) division with the laparoscopic stapling device. The UPJ was free of obstruction after division of the ovarian

DISCUSSION

Ovarian vein syndrome is a rare and sometimes controversial cause of ureteral obstruction.¹⁻⁸ A preoperative diagnosis of OVS is warranted only after more common causes of ureteral obstruction have been excluded. The traditional treatment for this condition has been open excision of the ovarian vein and ureterolysis.^{3,5-8} For the patient described in this report, a laparoscopic approach provided safe and effective treatment for OVS.

In this case, the decision to proceed with laparoscopic exploration was influenced by many factors. First, based on the preoperative evaluation, the presumed diagnosis was ureteropelvic junction obstruction. Because the right kidney had decreased differential function, a laparoscopic approach as opposed to endopyelotomy was the favored method for repair. Poor renal function has been reported to adversely impact successful treatment of ureteropelvic junction obstruction.^{9,10} The presence of renal malrotation also influenced the use of the laparoscopic approach. Renal anomalies can be associated with a higher likelihood of obstruction secondary to crossing vessels.¹¹ In addition, a laparoscopic approach permits careful assessment of the periureteral anatomy and the possibility of completing a dismembered pyeloplasty if warranted. Finally, use of a laparoscopic approach may limit the risk of hemorrhagic complications if a vessel is incised. In 2 large series of patients treated with laparoscopic pyeloplasty, no hemorrhagic complications were reported.^{12,13} On the other hand, a 3% to 4% incidence of hemorrhagic complications necessitating blood transfusion, embolization, or both, is reported with endopyelotomy.¹⁴⁻¹⁶ In fact, Schwartz and Stoller¹⁶ recently reported significant hemorrhage associated with laceration of an obstructing ovarian vein during Acucise endopyelotomy.

Although the traditional treatment for OVS is open surgery, this case represents the second report of laparoscopic division of ovarian veins.⁷ In another case report, laparoscopic excision of the entire ovarian vein was reported as definitive management.⁸ Unique to this case is the associated renal malrotation and radiographic findings that favored a diagnosis of ureteropelvic junction obstruction rather than OVS. Because of the decreased differential function of the right kidney and presumed ureteropelvic junction obstruction, a laparoscopic approach was recommended for definitive treatment. This approach was fortuitous as it provided a better

assessment of the periureteral anatomy and identification of the ovarian vein. Alternative treatment with endopyelotomy may have resulted in a poor outcome or significant complications. Computerized tomography is not routinely obtained for the evaluation of presumed primary UPJ obstruction, but given the history of malrotation in this case, such an evaluation would probably have identified the obstructing ovarian vein and prompted similar treatment recommendations.

In conclusion, ovarian vein syndrome is a rare cause of ureteral obstruction. To exclude more common causes of ureteral obstruction, a careful preoperative evaluation is required. The presence of aberrant vessels and ureteropelvic junction obstruction is much more common in anomalous kidneys than OVS.¹¹ For such high-risk patients with normal differential function, the preoperative evaluation should include an assessment of crossing vessels prior to treatment with endopyelotomy. For patients with decreased renal function, computerized tomography may be helpful; however, endopyelotomy success is reduced and laparoscopic exploration of the UPJ is recommended because it permits rapid identification of the cause of obstruction and, in this case, safe effective treatment of OVS.

References:

1. Dykhuizen RF, Roberts JA. The ovarian vein syndrome. *Surg Gynecol Obstet.* 1970;130:443-452.
2. Toland KC, Pelander WM, Mohr SJ. Postpartum ovarian vein thrombosis presenting as ureteral obstruction: a case report and review of the literature. *J Urol.* 1993;149:1538-1540.
3. Otnes B, Enge I, Mathisen W. The ovarian vein syndrome: a cause of ureteral obstruction. *Scand J Urol Nephrol.* 1972;6:206-209.
4. Shaw MS, Tozzo PJ. Right ovarian vein syndrome. *Urology.* 1974;3:737-738.
5. Derrick FC Jr, Rosenblum R, Fensill FJ. Right ovarian vein syndrome: six year critique. *Urology.* 1973;1:383-385.
6. Meiraz D, Savir A. Ovarian vein syndrome: a case report. *J Urol.* 1981;125:737-738.
7. Elashry OM, Nakada SY, Wolf JS Jr, Figenshau RS, McDougall EM, Clayman RV. Ureterolysis for extrinsic ureteral obstruction: a comparison of laparoscopic and open surgical techniques. *J Urol.* 1996;156:1403-1410.
8. Marcovich R, Wolf JS Jr. Laparoscopy for the treatment of positional renal pain. *Urology.* 1998;52:38-43.

9. Gupta M, Tuncay OT, Smith AD. Open surgical exploration after failed endopyelotomy: a 12-year perspective. *J Urol.* 1997;157:1613-1619.
10. Van Cangh PJ, Wilmart JF, Opsomer RJ, Abi-Aad A, Wese FX, Lorge F. Long-term results and late recurrence after endoureteropyelotomy: a critical analysis of prognostic factors. *J Urol.* 1994;151:934-937.
11. Gleason PE, Kelalis PP, Husmann DA, Kramer SA. Hydronephrosis in renal ectopia: incidence, etiology, and significance. *J Urol.* 1994;151:1660-1661.
12. Janetschek G, Peschel R, Altarac S, Bartsch G. Laparoscopic and retroperitoneoscopic repair of ureteropelvic junction obstruction. *Urology.* 1996;47:311-316.
13. Bauer JJ, Bishoff JT, Moore RG, Chen RN, Iverson AJ, Kavoussi LR. Laparoscopic versus open pyeloplasty: assessment of objective and subjective outcome. *J Urol.* 1999;162:692-695.
14. Kletscher BA, Segura JW, LeRoy AJ, Patterson DE. Percutaneous antegrade endopyelotomy: review of 50 consecutive cases. *J Urol.* 1995;153:701-703.
15. Khan AM, Holman E, Pasztor I, Toth C. Endopyelotomy: experience with 320 cases. *J Endourol.* 1997;11:243-246.
16. Schwartz BF, Stoller ML. Complications of retrograde balloon cautery endopyelotomy. *J Urol.* 1999;162:1594-1598.